

REMARKS

This communication is a full and timely response to the Office Action dated June 25, 2009. Claims 1-18 are pending. By this communication, claims 1, 6, 9, 12, and 17 are amended. Support for the amended subject matter can be found, for example, on page 3, lines 17-23 and in the paragraph bridging pages 5 and 6 of the disclosure.

Claims 1-10 and 12-18 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by *Lockie et al* (U.S. Patent No. 5,642,122). Applicants respectfully traverse this rejection.

Figures 1A-6 illustrate exemplary embodiments directed to a phased array antenna having a base member a plural deployable antenna panels stacked one on top of the other on the base member. The base member is defined by sides or edge regions onto which each panel is mounted. Each panel is mounted to a respective side of the base member through a respective hinge. The hinge has a pivot point and an extended sleeve that includes a rotatable pin. When deployed each antenna panel rotates upon the hinge to make a 180° rotation and a translatory movement to the plane at the top of the base member.

Figure 1 broadly encompasses the foregoing features by reciting the following:

A phased array antenna, deployable from a retracted condition to a deployed condition, comprising a base member having, at least in part, a polygonal cross-sectional form defined by a plurality of edge regions, and a plurality of antenna panels, each antenna panel being connected, by a respective hinge means, to a respective one of said edge regions of said base member, such that, in said retracted condition, two or more of the antenna panels are stacked one on top of the other on the base member, and the hinge means being such that the antenna panels can be rotated sequentially one after the other, around a single pivot point for each respective hinge means,

from the stack to a position in which each panel is adjacent a respective base member edge region to provide said deployed condition wherein the phased array antenna provides an extended area.

Similarly, claim 17 recites the following:

A telecommunications satellite comprising a service module and a phased array antenna coupled to the service module by means of a boom member, the service module including solar panels, and the phased array antenna being deployable from a retracted condition to a deployed condition, wherein in the retracted condition, the antenna is positioned on top of the service module, and the boom member including rotatable means so that the antenna, when deployed, can be rotated relative to the service module, and the antenna comprising a plurality of antenna panels, such that, in said retracted condition, two or more of the antenna panels are stacked one on top of the other, wherein for deployment, the antenna is firstly moved by means of the boom member to a position away from the service module, and then the antenna panels are rotated to the deployed condition wherein the phased array antenna provides an extended area.

The embodiment recited in claims 1 and 17 provide several advantages in that by using the hinge means, that comprises the single pivot point for the whole rotation, the edge of the panel in the deployed position is very close to, or adjoins, the edge of the base member. Electrical connection can therefore be easily effected between the panel and the base. Electrical connection may be effected by protruding electrical contacts that are spring loaded, or of cantilever design for example. Alternatively, they may make a snap fit connection. Proximity capacitive connections may also be used. Moreover, the clawed hinge construction confers great mechanical rigidity to the positioning of the deployed panel relative to the base member. This facilitates a number of multi-pin connector schemes because of the precision with which the male and female parts can be aligned.

Lockie fails to disclose or suggest every feature recited in Applicants' claim 1. Rather, *Lockie* discloses an antenna wherein a number of antenna arms can be unfolded from a central plate. Each arm comprises a number of individual support panels. Only one of the support panels is connected to a side of the central plate through a hinge. In the main embodiment, three arms are stowed in the folded configuration on the stop side of the plate and three arms are stowed in a folded

configuration on the bottom side of the plate. The support panels that are connected to the central plate through a respective hinge do not overlap as they are folded and consequently this embodiment does not disclose "panels stacked on top of the other on the base member", as required by claim 1.

In a second embodiment illustrated in Figure 13, *Lockie* discloses a design in which the arms are all folded onto the same side of the central plate. Particularly, *Lockie* discloses "a first set of articulated arms 40a is hinged to the central plate 39 and fold down against the obverse side O of the central plate 39. A second set of articulated arms 40b folds down upon the first set 40a. To achieve this configuration, the second set of articulated arms 40b is displaced from the first set of articulated arms 40a by one side SD of the octagonal central plate 39 and is connected to the central plate 39 by standoffs 45. See *Lockie*, column 10, lines 35 to 42. Here, because of the way the hinge is arranged and the stand-offs, the rotation from the stack to the deployed position is not "around a single pivot point for each respective hinge means" as recited in claim 1. Rather, the rotation is effected by rotating the panel about two pivot points, one on each side of the stand-offs 45. One of ordinary skill would understand that the design of *Lockie* allows for the hinge means of one of the panels to rotate around a single pivot point. However, the hinge means of the other panels must use stand-offs and two pivot points for the rotation so that the panels can be stacked one on top of the other in the retracted condition. Thus, the other panels do not rotate around a single pivot point, as recited in claim 1.

Lockie also fails to disclose or suggest that the panel is not rotated to a "position in which each panel is adjacent a respective base member edge region" as

recited in claim 1. Instead, as described by *Lockie*, the panel is separated from the base member edge region by the stand-off 45.

Moreover, *Lockie* cannot achieve the stated advantages of the claimed embodiment, as *Lockie*, the edges of the panel and the base member/central plate are separated by a stand-off 45 and electrical connection has to be effected by other means, resulting in a more complex system

In sum, *Lockie* fails to disclose, suggest, or otherwise contemplate using hinge means for each panel so that the panel is rotated "around a single pivot point" to a position in which panel is adjacent a respective base edge region and also allow the panels to be "stacked one on top of the other". As a result, *Lockie* fails to anticipate claim 1.

Independent claim 17 recites, among other features, "a phased array antenna coupled to [a] service module by means of a boom member, the service module including solar panels", "wherein in the retracted condition, the antenna is positioned on top of the service module, and the boom member including rotatable means so that the antenna, when deployed, can be rotated relative to the service module" and "wherein for deployment, the antenna is firstly moved by means of the boom member to a position away from the service module."

The boom member and the rotatable means allow the antenna to point at the earth while the service module solar arrays point at the sun. This construction allows the solar arrays to be fixed to the service module such that they do not rotate with respect to the service module.

Lockie on the other hand, fails to teach or suggest the distinguishing features recited above in combination with an antenna comprising a plurality of antenna

panels, such that, in said retracted condition, two or more of the antenna panels are stacked one on top of the other. As a result, the subject matter recited in claim 17 is not anticipated by *Lockie*.

To properly anticipate a claim, the document must disclose, explicitly or implicitly, each and every feature recited in the claim. See Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Based on the foregoing discussion withdrawal of the rejection under 35 U.S.C. §102 is respectfully requested.

Claim 11 is rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over *Lockie et al.* Applicants respectfully traverse this rejection.

Claim 11 depends from independent claim 1. By virtue of this dependency, claim 11 is deemed distinguishable over *Lockie*. Moreover, the Examiner appears to take Official Notice with respect to the claimed electrical connector means. Applicants hereby challenge the Examiner's Official Notice and request that documentary evidence or support be provided to substantiate the alleged knowledge in the art. Based on the discussion above regarding claim 1, Applicant's submit that this claim is allowable.

CONCLUSION

Based on the foregoing amendments and remarks, Applicants submit that claims 1-18 are allowable and this application is in condition for allowance. In the event any issues adverse to allowance remain, the Examiner is invited to contact the undersigned.

Respectfully submitted,

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